



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,377	01/27/2004	Robert F. Payne	TI-37350 (1962-09500)	1598
23494	7590	08/05/2005		EXAMINER
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			LAM, TUAN THIEU	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/765,377	PAYNE ET AL.
Examiner	Art Unit	
Tuan T. Lam	2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 05 July 2005.

2a)  This action is FINAL.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1-25 is/are pending in the application.  
4a) Of the above claim(s) 9-19 and 23-25 is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-8 and 20-22 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 27 January 2004 is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date .  
4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_ .  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_\_

## DETAILED ACTION

This is a response to the amendment filed 7/5/2005. Claims 1-8 and 20-22 have elected for further examination without traverse. Claims 9-19 and 23-25 have been withdrawn from consideration.

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation of "clocked buffer" of claim 3 in combination with the limitations of claims 1 and 22, "secondary hold latch" of claim 4 in combination with the limitations of claim 1, "pass gate" of claim 5 in combination with the limitations of claim 1, "a second pair of input differential transistors" of claim 7 in combination with claim 1, "a second regenerative latch" of claim 8 in combination with claim 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-5, 7-8 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 3 is indefinite because it is inconsistent with the limitations recited in claim 1.

Claim 1 calls for a sense amplifier with a leakage device reads on figure 1's element 44. Claim 3 depends on claim 1 and further defines clocked buffer which shown in figure 3. However, figure 3 does not read on claim 1 because figure 3 does not have the leakage device as called for in claim 1. Clarification and correction are required.

5. Claim 4 is also inconsistent with limitations set forth in claim 1 for the same rationale as stated in claim 3.

6. Claims 7-8 are also inconsistent with limitations set forth in claim 1 for the same rationale as stated in claim 3. The recitation of "another input differential pair of transistors" of claim 7 is indefinite because it is unclear as to if the another input differential pair of transistors is the same as the second pair of input differential transistors recited in line 1.

7. Claim 22 is also inconsistent with limitations set forth in claim 20 for the same rationale as stated in claim 3.

Claim 5 is indefinite because of the technical deficiencies of claim 4.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-2, 6, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Branson et al. (USP 5,508,644).

Figure 1 of Branson et al. show a sense amplifier comprising a regenerative latch (12, 14, 16, 18), input differential pair of transistors (20, 22), leakage device (26) coupled to each of the input differential transistors, said leakage device adapted to maintain the input differential pair of transistors in an on state during a pre charge phase as called for in claims 1-2, 20 and 22.

Regarding claim 6, figure 1 of Branson et al. shows a pair of clock transistors (34, 36).

10. Claims 1-2, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Taft (USP 6,392,449). Figure 1 of Taft shows a sense amplifier comprising a regenerative latch (M3A, M3B, M4), input differential pair of transistors (M2A, M2B), leakage device (M1A) coupled to each of the input differential transistors, said leakage device adapted to maintain the input differential pair of transistors in an on state during a pre charge phase as called for in claims 1-2, 20 and 22.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-6 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (USP 6,756,823) in view of Branson et al. (USP 5,508,644). Figure 4 of Chen et al. shows a differential sense amplifier comprising a sense amplifier (460), clocked buffer (470) and hold latch (480).

Chen does not show the sense amplifier having limitations as called for in claims 1-2 and 20. Figure 1 of Branson et al. shows a fast, small and relatively simple sense amplifier comprising a regenerative latch (12, 14, 16, 18), input differential pair of transistors (20, 22), leakage device (26) coupled to each of the input differential transistors, said leakage device adapted to maintain the input differential pair of transistors in an on state during a pre charge phase. Therefore, it would have been obvious to person skilled in the art at the time the invention was made to replace Chen et al.'s sense amplifier (460) with Branson et al.'s sense amplifier for the purpose of saving chip's space and increasing operational speed.

Regarding claims 3-4 and 21, figure 4 of Chen et al. shows clocked buffer (470) and a second latch (480).

Regarding claim 5, the combination of Branson et al. and Chen et al. show the pass gate (470 is a clocked inverter passing the output of the sense amplifier to the second latch 480 responsively to the passing control clock signal).

Regarding claim 6, figure 1 of Branson et al. shows a pair of clock transistors (34, 36).

Regarding claim 22, figure 1 of Chen et al. shows a latch for maintaining output decision.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Branson et al. (USP 5,508,644). Figure 1 of Branson et al. show a sense amplifier comprising a regenerative latch (12, 14, 16, 18), input differential pair of transistors (20, 22), leakage device (26) coupled to each of the input differential transistors, said leakage device adapted to maintain the input differential pair of transistors in an on state during a pre charge phase. The difference seen between the prior art and the present invention is that the prior art does not a second pair of input differential transistor and a second regenerative latch as called for in claims 7-8. However, one skilled in the art would have recognized the additional differential input transistor and the additional regenerative latch would increase overall gain of the sense amplifier. Therefore, it would have been obvious to person skilled in the art at the time the invention was made to include additional pair of input differential transistors and regenerative latch for the purpose of increasing gain thus preserve the signal integrity.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Lam whose telephone number is 571-272-1744. The examiner can normally be reached on Monday to Friday (7:30 am to 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIMOTHY P. CALLAHAN can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tuan T. Lam  
Primary Examiner  
Art Unit 2816

7/13/2005